

FLATWOODS CREEKSHELL

Strophitus williamsi



Order: Unionoida

Family: Unionidae

FNAI Ranks: G2/S1

U.S. Status: none

FL Status: none

Description: This species was first recognized in 2018 to include Choctawhatchee and Escambia river populations formerly included within *Anodontoides radiatus*, with both species being placed in the genus *Strophitus* (Smith et al. 2018). *Strophitus williamsi* is a medium-small bivalve mollusk known to reach a length of 59 mm (2.3 inches), though possibly achieving greater size. The shell is relatively thin, smooth, moderately inflated (width 35-42% of length), and with an oval to elliptical shape (height 52-64% of length). The posterior margin is rounded to bluntly pointed, dorsal margin straight to slightly convex, and ventral margin convex to rounded. The posterior ridge is rounded and posterior slope relatively low and flat to slightly convex. The broad umbo is slightly inflated and slightly elevated above the hinge line; umbo sculpture consists of thin to moderately thick ridges; and the umbo cavity is wide and very shallow. Externally, the shell is shiny to dull and dark olive in color, with dark green rays that vary in width and intensity; the inner lining of the valves (nacre) is an iridescent bluish white. Pseudocardinal teeth are small, thin, and low, with one in each valve; lateral teeth are absent (Deyrup and Franz 1994, Williams et al. 2008, Williams et al. 2014, Smith et al. 2018).

Similar Species: *Strophitus williamsi* resembles *Villosa vibex* (southern rainbow), but the latter has well-developed pseudocardinal and lateral teeth, which respectively are rudimentary and absent in the former. Co-occurring *Villosa* species have mottled mantle margin pigment whereas *S. williamsi* does not. Small *Pyganodon grandis* (giant floater) can also be similar but lack defined rays on the shell and are larger and more inflated than *S. williamsi* (Williams et al. 2008, Williams et al. 2014). *P. grandis* lacks pseudocardinal teeth and has umbo sculpture with knobby projections while *S. williamsi* has sculpture with thin or medium loops. Not surprisingly, *S. williamsi* closely resembles its sister species *S. radiatus* (see separate account), although the two live in different drainages. *S. williamsi*

tends to be more inflated (width 35-42% of length vs. 30-40%) and less elongate (height 52-64% of length vs. 48-61%) (Smith et al. 2018).

Habitat: This species is found in main river channels as well as tributary creeks; it typically occurs in slow to moderate currents on sand, sandy gravel, and sandy mud substrates.

Seasonal Occurrence: Adults are present in the substrate year-round. Females are long-term brooders and may be gravid much of the year (Williams et al. 2014).

Florida Distribution: Smith et al. (2018) designated the Florida range of this species as the Choctawhatchee and Escambia river systems, although confirmed records for the latter are currently restricted to Alabama.

Range-wide Distribution: *Strophitus williamsi* is endemic to the Escambia and Choctawhatchee drainages of southern Alabama and adjacent western Florida, although its apparent absence from the Yellow River drainage between these warrants further investigation (Smith et al. 2018).

Conservation Status: Like most of Florida's native freshwater mussels, the flatwoods creekshell has declined throughout its limited range. Though still extant in the Choctawhatchee River system, the species is generally rare where it is found. Most of the Florida portion of the floodplain and part of its tributary Holmes Creek are in the Choctawhatchee River Water Management Area. Although this provides important protection, it does not prevent pollution from upstream sources, nor does it prevent impacts of invasive species such as the introduced Asian clam (*Corbicula fluminea*). *Strophitus williamsi* was included within *S. radiatus* when the latter (as *Anodontoides radiatus*) was petitioned in 2011 for federal listing. *S. williamsi* may merit federal listing as Threatened under its current concept.

Protection and Management: Additional protection via acquisition or easement is needed for those portions of the Choctawhatchee River and Holmes Creek floodplains and adjacent uplands that remain private. Managing for viable populations of freshwater mussels requires focusing on the maintenance of high-quality waters and benthic habitats, as well as ample stream and river flows (damming, dredging, and excessive water consumption are strongly discouraged); this requires multi-state cooperation. Valuable tools include the establishment of

buffers and streamside management zones for all agricultural, silvicultural, mining, and developmental activities, and elimination or reduction of invasive species (especially other bivalves) if possible. Monitoring programs should focus on water and benthic habitat quality, and population sizes and statuses of both mussels and their host fishes (yet to be identified for *S. williamsi*) at all occupied sites. Additionally, it is important to promote responsible watershed land use practices by implementing aquatic habitat education programs for land use planners and resource managers, and to conduct periodic reevaluations of the effectiveness of habitat protection measures and watershed land use practices. Finally, for relatively small Gulf Coast rivers such as the Choctawhatchee, it is imperative to do everything possible to limit global warming and consequent sea level rise to limit saltwater intrusion and inundation of lower reaches.

References: Deyrup and Franz 1994, Smith et al. 2018, Williams et al. 2008, Williams et al. 2014.



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Flatwoods Creekshell

Strophitus williamsi



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